

Appl. No. 10/529,780
Reply to Office Action mailed November 29, 2006

R E M A R K S

Claim 1 was amended by inclusion of the features of claim 7. Editorial revisions were made to claims 1 to 6 and 8 to 11. New claims 15 to 17 are supported in the specification on page 9, lines 1 to 4.

New claims 18 to 20 are supported in the specification on page 9, lines 33 to 35.

New claim 21 is supported in the specification on page 11, lines 20 to 31.

Claims 5 and 11 were rejected under 35 USC 112, second paragraph, for the reasons indicated in item no. 1 at the top of page 2 of the Office Action.

Claims 5 and 11 were amended to avoid the 35 USC 112, rejection.

Withdrawal of the 35 USC 112, second paragraph rejection is respectfully requested.

The present claims are directed to a polyol mixture comprising

(1) 30 to 90% by weight of a crystalline polyester polyol produced by an aliphatic dicarboxylic acid and an aliphatic diol

Appl. No. 10/529,780
Reply to Office Action mailed November 29, 2006

as main components,

(2) 5 to 30% by weight of a polyester polyol produced by an aromatic polycarboxylic acid and an aliphatic polyol as main components and

(3) 5 to 40% by weight of a polycarbonate polyol;

a reactive hot melt composition obtained by reacting the polyol mixture and a polyisocyanate; and a molded product obtained by using the composition.

According to the present claims, there is provided a polyol mixture which is a precursor for a reactive hot melt composition which is excellent for adhering to a metal, particularly excellent for adhering to aluminum; a reactive hot melt composition obtained by the mixture; and a molded product using the composition. In particular, the product can be used for electric and electronic constitutional parts or semiconductor parts as disclosed on page 22, lines 21 to 29 of the present specification.

Claims 1 to 14 were rejected under 35 USC 103 as being unpatentable over USP 5,290,905 to Komiya et al. in view of USP 6,191,212 to Kube and further in view of USP 5,288,839 to Greco

Appl. No. 10/529,780
Reply to Office Action mailed November 29, 2006

and USP 6,831,110 to Carlson et al. for the reasons set forth in item no. 2 on pages 2 to 4 of the Office Action.

It was admitted in the Office Action that Komiya et al. fail to teach crystallinity and the possible combination of amorphous polyols.

It was also admitted in the Office Action that Komiya et al. do not explicitly teach the combination of crystalline and amorphous polyester.

In USP 5,290,905 to Komiya et al., a polyurethane obtained by copolymerizing a polymer diol of a polyesterc polycarbonate diol utilizing a long-chain diol having methyl branches or a mixed diol of a polyester diol and a polycarbonate diol, with an organic diisocyanate and a chain extender is disclosed as set forth in the abstract thereof. However, the Komiya et al. reference is directed to an invention in the field of an elastic polyurethane fiber, which is disclosed to be excellent in all of resistance to chlorine, water and mildew, thermal resistance and resistance to cold, as well as having high elongation, as described in column 1, lines 56-60 of the reference. The elastic

Appl. No. 10/529,780
Reply to Office Action mailed November 29, 2006

polyurethane fiber is used for clothes as disclosed in column 9, line 40 to column 10, line 15 of the reference.

In contrast to Komiya et al., the polyol mixture of the present claims is used for electronic constitutional parts or semiconductor parts, and thus, the technical field of the present invention is quite different from those of the Komiya et al. reference.

Moreover, there is no description in the Komiya et al. reference concerning the reactive hot melt of the present claims.

In Komiya et al., it is disclosed that the polymer diol comprises a polyester diol β and a polycarbonate diol γ (column 5, line 18 to column 6, line 66 of Komiya et al.), but the Komiya et al. reference is silent regarding the crystallinity of the polyester diol β .

In USP 6,191,212 to Kube, there is disclosed a moisture-curing hotmelt adhesive containing a) polyurethane prepolymers formed by reaction of (i) at least partly crystalline polyester polyols, which are solid at room temperature and have a degree of crystallization of at least 30%, optionally in admixture with liquid polyester polyols, which are liquid at 20°C and have a

Appl. No. 10/529,780
Reply to Office Action mailed November 29, 2006

glass temperature below 0°C, with amorphous polyester polyols, which are solid at ambient temperature and have a glass temperature above 0°C, with polyether polyols, or mixtures of any two or more of said liquid polyester polyols, amorphous polyester polyols, and polyether polyols with (ii) isocyanate, and b) isocyanurates. However, the use of a polycarbonate polyol as recited in applicants' present claims is not disclosed or suggested in Kube. In addition, adhesiveness to wood is disclosed in the Kube reference (see column 5, lines 16-32 and Table 2 of Kube; tensile shear strengths on test specimens of beechwood), but there is no disclosure concerning adhesiveness to a metal (aluminum) (see page 10, lines 3 to 10 of the present specification).

Moreover, Comparative example 3 in Table 1 on page 18 of the present specification shows that a combination of a crystalline polyester and a polyether does not have adhesive properties (see Table 1 on page 19 of the specification - see the column of "Adhesiveness" of Comparative example 3). It is noted that "x" in Table 1 means that spontaneous peeling occurred after standing (see page 17, lines 14 to 15 of the specification).

Appl. No. 10/529,780
Reply to Office Action mailed November 29, 2006

Kube discloses a polyurethane prepolymers comprising 94 to 40% by weight of crystalline polyester polyols, and 0 to 40% by weight of amorphous polyester polyols (column 3, lines 42-46 and Claim 10 of Kube). This means that amorphous polyester polyols are not an essential component of Kube.

In contrast to Kube, in the present claims, a polyester polyol produced by an aromatic polycarboxylic acid and an aliphatic polyol as main components is essential as it is contained in an amount of 5 to 30% by weight as defined in applicants' present claim 1.

USP 5,288,839 to Greco discloses diol-terminated polycarbonates, their use in the synthesis of prepolymers, which are used in reactive adhesives and/or sealing formulations of the hygro-, photo- or thermo-setting type, and a procedure for their preparation (column 1, lines 4-8 of Greco). Also, Greco discloses that amorphous polyesters mixed with a crystalline polyester reduce shrinkage in the crystalline phase and can, especially the vitreous types, increase the initial tack (column 1, lines 53-56 of Greco). However, Greco does not teach or suggest the manner of combination of the polyesters, the ratio

Appl. No. 10/529,780
Reply to Office Action mailed November 29, 2006

thereof, and an object to be adhered. Moreover, there is no disclosure in Greco concerning an adhesion time, adhesiveness to a metal, etc.

USP 6,821,110 to Carlson et al. disclose a use of hot melt adhesives to a molding material, but there is no description with respect to the reactive hot melt composition of the present claims.

In summary, the reactive hot melt recited in applicants' claims were rejected as being unpatentable over Komiya et al. in view of Kube and in further view of Greco and Carlson et al. However, as explained above, the Komiya et al. reference is directed to a fiber and the technical field thereof is substantially different from that of Kube and Greco, which are directed to an adhesive. Therefore, it is respectfully submitted that one of ordinary skill in the art would not consider to combine Komiya et al. with Kube and Greco. Moreover, there is no teaching or suggestion in the cited references concerning an adhesive having an excellent adhesiveness to a metal, particularly to aluminum, and a polyol mixture comprising a crystalline polyester polyol, a polyester polyol prepared from an

Appl. No. 10/529,780
Reply to Office Action mailed November 29, 2006

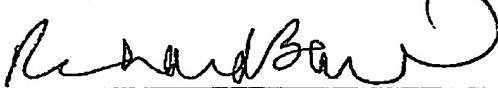
aromatic polycarboxylic acid and an aliphatic polyol, and a polycarbonate polyol, as recited in applicants' claims.

It is therefore respectfully submitted that applicants' claims are not rendered obvious over the references, either singly or combined in the manner relied upon in the Office Action in view of the many distinctions discussed hereinabove. It is furthermore submitted that there are no teachings in the references to combine them in the manner relied upon in the Office Action. Withdrawal of the 35 USC 103 rejection is thus respectfully requested.

Reconsideration is requested. Allowance is solicited.

If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned at the telephone number given below.

Respectfully submitted



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